PATENT SPECIFICATION

605,076

Application Date: Dec. 13, 1945. *No. 33757/45.*

Complete Specification Left: Jan. 11, 1947.

Complete Specification Accepted: July 15, 1948.

Index at acceptance:—**Class 61(ii),** E5(e: g: n3).

PROVISIONAL SPECIFICATION

Improvements in or relating to Vices

We, CROLT ENGINEERING LIMITED, of Bentinck Street, Bolton, County of Lancaster, a British Company, and HARRY KAY, of 17, Markland, Hill Lane, Bolton, aforesaid, a British Subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in vices and similar clamping tools.

According to the invention one of the jaws of the vice is secured to the rod of a piston operating in a cylinder, the opposite end of the cylinder being connected through tubes or piping containing a control valve to an hydraulic pressure supply, the pressure of which is sufficiently high to hold and maintain the work between the jaws.

In one form of the invention one of the jaws is secured to the rod of an hydraulic piston, the jaw being slidably mounted on the bed of the vice and the cylinder being carried on the fixed or stationary end of the bed. The other jaw is slidably mounted on the bed so that its position relative to the hydraulically controlled jaw can be adjusted and then locked or held in the desired position. The opening of the control valve then causing the hydraulically operated jaw to clamp and hold the work between the two jaws.

In another form of the invention one jaw is fixed and the other jaw is slidably mounted on a second slide mounted on the bed of the vice. The hydraulic cylinder is affixed on the second slide which can be moved to adjust the position of the jaw relative to the fixed jaw and then locked to the bed. The operation of the control valve moving the hydraulically controlled jaw relatively to the slide on which it is mounted to clamp and hold the work between the two jaws.

The hydraulic pressure controlling the jaw of the vice is preferably obtained by a compressed air-hydraulic fluid intensifier.

Dated this 12th day of December, 1945.
J. OWDEN O'BRIEN & SON,
Patent Agents. Manchester, 2.

COMPLETE SPECIFICATION

Improvements in or relating to Vices

We, CROLT ENGINEERING LIMITED, of Bentinck Street, Bolton, County of Lancaster, a British Company, and HARRY KAY, of 17, Markland, Hill Lane, Bolton, aforesaid, a British Subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in vices and similar clamping tools of the type in which the movable jaw is operated by the piston of a hydraulic cylinder.

According to the present invention the two jaws of the device are relatively adjustable prior to the application of the clamping pressure to the piston of the hydraulic cylinder either by slidably mounting the jaw not operated by the piston of the hydraulic cylinder, on the bed of the device or by slidably mounting the hydraulic cylinder and the jaw operated by the piston thereof on the said bed, means being provided to lock the jaw or the cylinder slide to the bed after adjustment.

The accompanying drawings illustrate a form of the invention in which one of the jaws of the vice is hydraulically operated the other jaw being movable and adapted to be fixed in any desired position relative to the first jaw. The invention will be described with reference to these

drawings in which:—

Fig. 1 is a perspective view of the vice;

Fig. 2 is a side elevation thereof;

Fig. 3 is a plan;

Fig. 4 is an end elevation looking in the direction of the arrow 4 Fig. 2;

Fig. 5 is a transverse section on line 5—5 Fig. 2.

The bed A of the vice is formed with grooves *a* in which the jaws B and C can slide. A hydraulic cylinder D is carried on the bed A adjacent to the jaw B and contains a piston the rod *d* of which is secured at its outer end to the jaw B. The cylinder D is connected by the pipe line d^1 to an hydraulic pressure supply, a control valve (not shown) being arranged in the pipe line d^1 between the cylinder and the hydraulic pressure supply.

A second groove a^1 is formed on the bed A above each of the grooves *a* and a rack or similar toothed strip E is located in each groove a^1 being secured to the bed A by the screws *e*. Instead of the racks E being formed separately from and secured to the bed A they may be cut in the sides of the latter.

The jaw C carries two pivoted fingers *c*, (see Figs. 1 and 5) the upper parts of which are under the action of a spring c^1 mounted between them. The fingers *c* extend downwards over the sides of the bed A and each is formed with or carries a toothed portion c^2 adapted to engage the teeth of the corresponding rack E. The pressure of the spring c^1 normally holds the toothed portions c^2 of the fingers *c* in engagement with the racks E, but these portions can be disengaged from the racks by pressing the upper portions of the fingers together against the pressure of the spring c^1.

When it is desired to hold or grip an article between the jaws B and C of the vice, the position of the jaw C is adjusted by disengaging the toothed portions c^2 of the fingers *c* from the racks E by pressing the upper portions of the fingers together and sliding the jaw along the bed to a position such that the distance between the two jaws is sufficient to allow of the article being placed between them. The pressure on the fingers *c* is then removed allowing the spring c^1 to cause the toothed portions c^2 to reengage the racks E. The jaw C is thus locked to the bed A. The control valve in the pipe line d^1 to the cylinder D is then opened and the hydraulic pressure on the piston in the cylinder will cause the piston to move the jaw B along the bed A towards the jaw C and clamp the article previously placed between the jaws. The article will remain clamped between the jaws until the hydraulic pressure on the piston in the cylinder D is released by the closing of the control valve.

Instead of the jaw C being slidably mounted on the bed A it may be affixed thereto and to the hydraulic cylinder controlling the jaw B be carried on a slide capable of being moved longitudinally of the bed of the vice relative to the fixed jaw and then locked to the bed. In this arrangement the operation of the control valve moves the hydraulically controlled jaw B relatively to the slide to clamp and hold the work between the two jaws.

The hydraulic pressure controlling the jaw of the vice is preferably obtained by a compressed air-hydraulic fluid intensifier.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed we declare that what we claim is:—

1. A vice or similar clamping device of the type referred to wherein the two jaws of the device are relatively adjustable prior to the application of the clamping pressure to the piston of the hydraulic cylinder either by slidably mounting the jaw, not operated by the piston of the hydraulic cylinder, on the bed of the device or by slidably mounting the hydraulic cylinder and the jaw operated by the piston thereof on the said bed, means being provided to lock the jaw or the cylinder slide to the bed after adjustment.

2. A vice or similar clamping device as in claim 1 wherein the hydraulic pressure for operating the jaw is obtained by a compressed air hydraulic fluid intensifier.

3. A vice constructed substantially as described with reference to and as illustrated in the accompanying drawings.

Dated this 10th day of January, 1947.

J. OWDEN O'BRIEN & SON,
Chartered Patent Agents,
Manchester, 2.

Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1948.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies, price 1s. 0d. each (inland) 1s. 1d. (abroad) may be obtained.

[This Drawing is a reproduction of the Original on a reduced scale.]

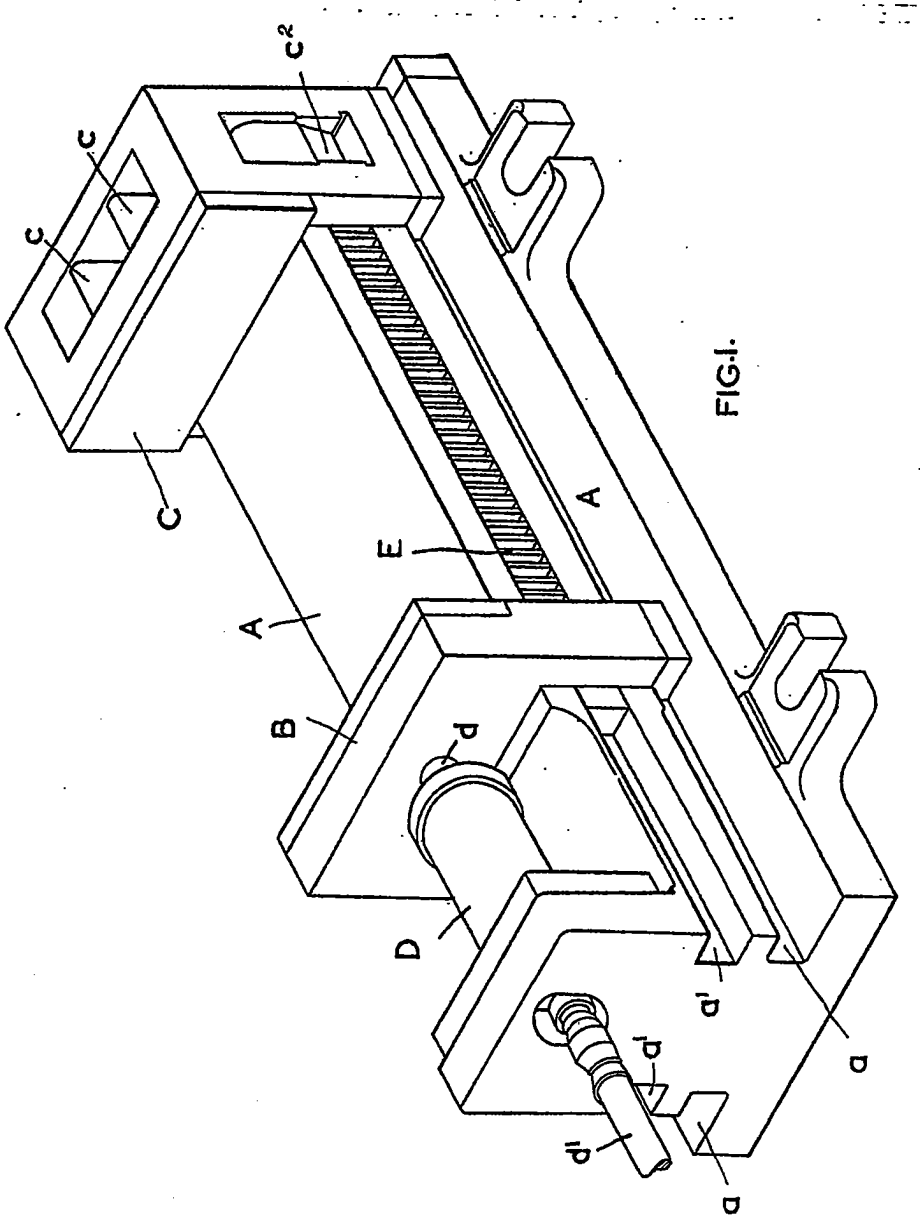

FIG.1.

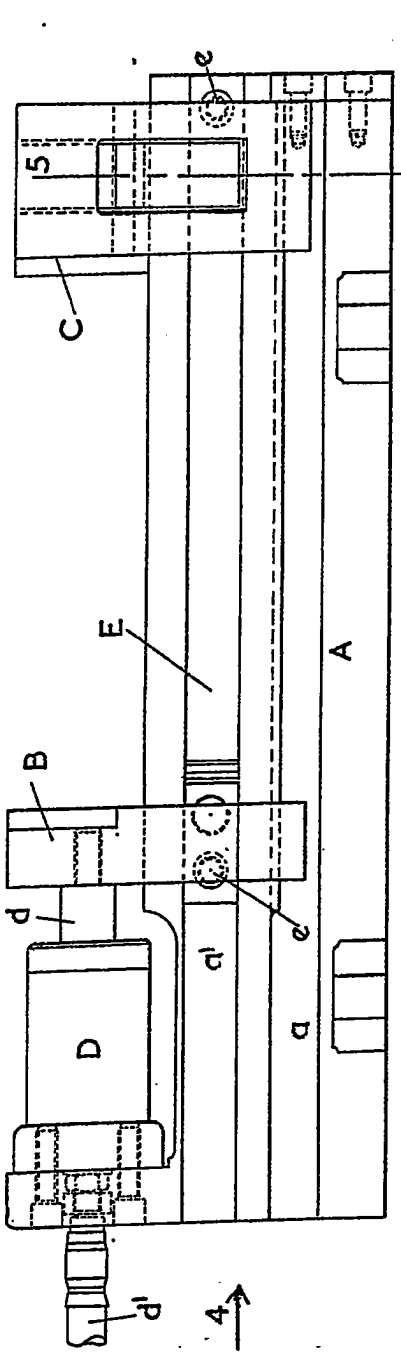

FIG.2.

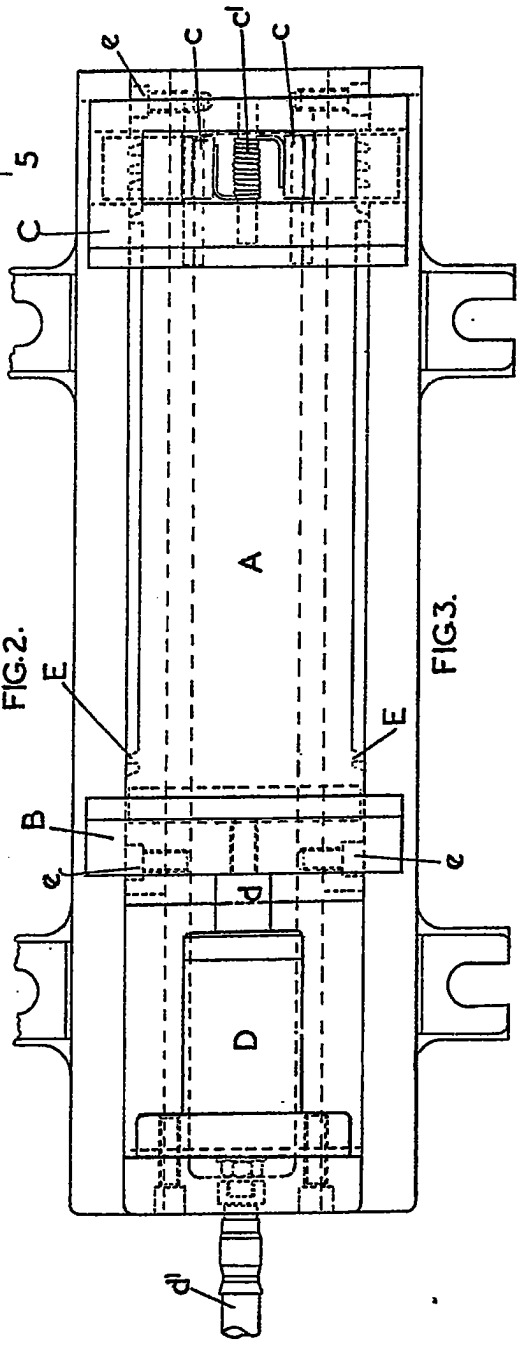

FIG.3.

H.M.S.O. (Ty. P.)

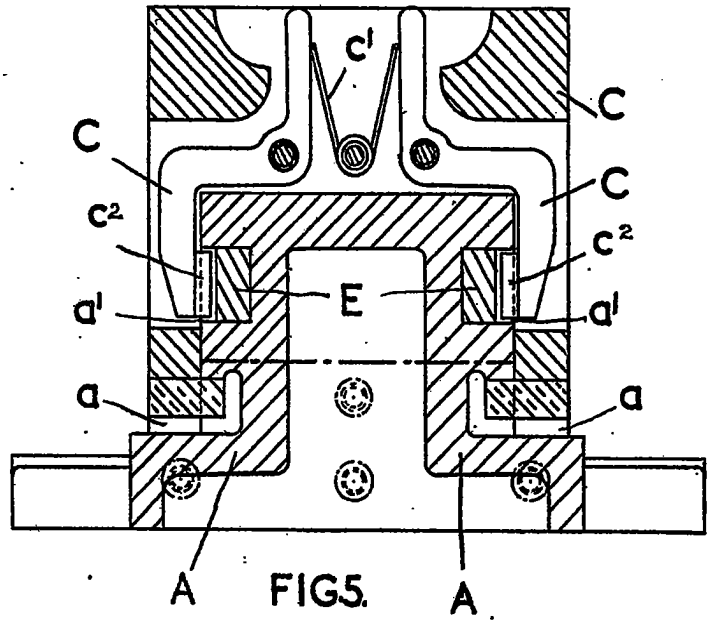

FIG5.

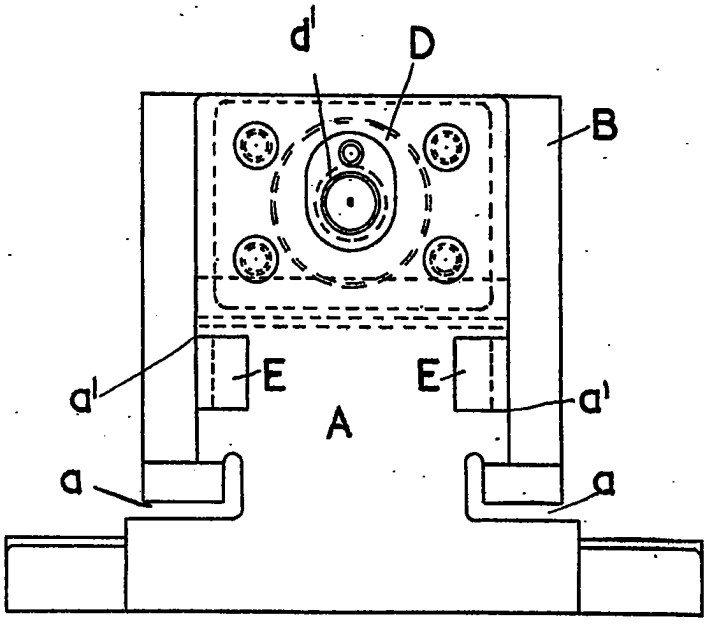

FIG4.